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Song of the New Century

By EDWIN MARKHAM

SWUNG in the Purpose of the Upper Sphere,
We sweep on to the Century anear.
But something makes the heart of man forbode,
For Labor is the Sphinx beside the road;
And we must answer its dread Question—yea,
Or perish as the tribes of yesterday.

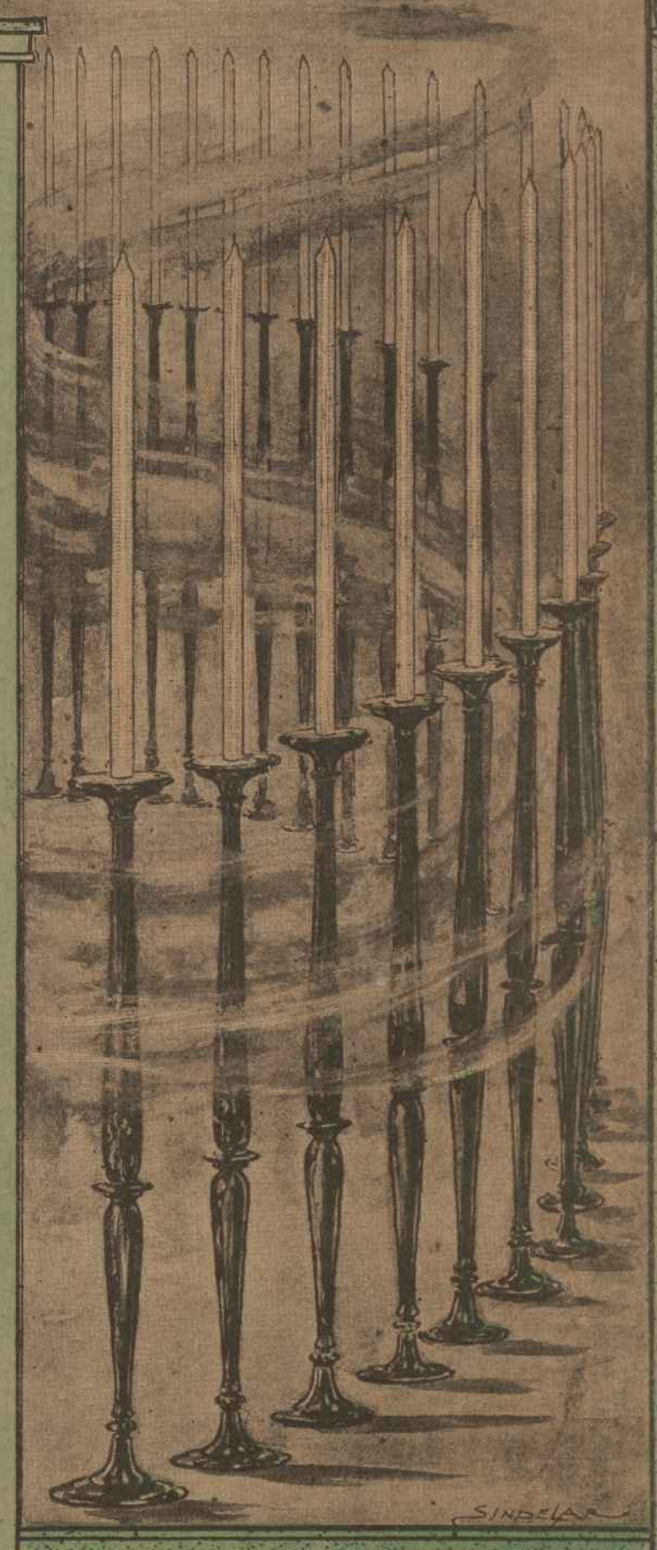
THUNDER and earthquake crouch beyond the gate;
But fear not: man is greater than his fate.
And one will come with Answer—with a word
Wherein the feet of morning will be heard;
One who will feel the grief in every breast,
The heart-cry of humanity for rest.

SO we await the Leader to appear,
Thinker and Doer and Seer,
The hero who will fill the Labor Throne,
And build the Comrade Kingdom, stone by stone—
That Kingdom that is greater than the Dream,
Breaking through ancient vision, gleam by gleam—
Something that Song alone can faintly feel,
And only Song's wild rapture can reveal.

THRILLED by the Cosmic Oneness he will rise,
Youth in his heart and morning in his eyes;
While glory fallen from the far-off goal
Will send mysterious splendor on his soul.
Him shall all toilers know to be their friend;
Him shall they follow faithful to the end.

THOUGH every leaf were a tongue to cry, "Thou must"
He would not say the unjust thing is just.
Not all the fiends that cry in the eclipse
Shall shake his heart or hush his lyric lips.
His cry for justice, it will stir the stones
From Hell's black granite to the Seraph thrones.

EARTH listens for the coming of his feet;
The hushed Fates lean expectant from their seat.
He will be calm and reverent and strong,
And carrying in his thought the fire of song
Will send a cry upon these weary men,
A cry to make the heart grow young again,
A cry to comrades scattered and afar:
"Be constellated, star by circling star;
Give to all mortals justice and forgive—
License must die that Liberty may live.
Let Love shine through the fabric of the state—
Love deathless, Love whose other name is Fate.
Fear not: we cannot fail—
The Vision will prevail.
Truth is the Oath of God, and sure and fast,
Through death and Hell holds onward to the last."



The Wonderful Century

By Alfred Russel Wallace

MEN of the nineteenth century have not been slow to praise it. The wise and the foolish, the learned and the unlearned, the poet and the pressman, the rich and the poor, alike swell the chorus of admiration for the marvellous inventions and discoveries of our own age, and especially for those innumerable applications of science which now form part of our daily life, and which remind us every hour of our immense superiority over our comparatively ignorant forefathers.

But though in this respect (and in many others) we undoubtedly think very well of ourselves, yet, in the opinion of the present writer, our self admiration does not rest upon an adequate appreciation of the facts. No one, so far as I am aware, has yet pointed out the altogether exceptional character of our advance in science and the arts during the century which is now so near its close. In order to estimate its full importance and grandeur—more especially as regards man's increased power over nature, and the application of that power to the needs of his life to-day, with unlimited possibilities in the future—we must compare it, not with any preceding century, nor even with the last millennium, but with the whole historical period—perhaps even with the whole period that has elapsed since the stone age.

Having thus briefly indicated our standpoint, let us proceed to sketch in outline those great advances in science and the arts which are the glory of our century. In the course of our survey we shall find that the more important of these are not mere improvements upon, or developments of anything that had been done before, but that they are entirely new departures, arising out of our increasing knowledge of and command over the forces of the universe.

Taking first those inventions and practical appliations of science which are perfectly new departures, and which have also so rapidly developed as to have profoundly affected many of our habits, and even our thoughts and our language, we find them to be thirteen in number.

1. Railways, which have revolutionized land travel and the distribution of commodities.

2. Steam navigation, which has done the same thing for ocean travel, and has besides led to the entire reconstruction of the navies of the world.

3. Electric telegraphs, which have produced an even greater revolution in the communication of thought.

4. The telephone, which transmits, or rather reproduces, the voice of the speaker at a distance.

5. Friction matches, which have revolutionized the modes of obtaining fire.

6. Gas lighting, which enormously improved outdoor and other illumination.

7. Electric lighting, another advance, now threatening to supersede gas

8. Photography, an art which is to the external forms of nature what printing is to thought.

9. The Phonograph, which preserves and reproduces sounds as photography preserves and reproduces forms.

10. The Roentgen rays, which render many opaque objects transparent, and open up a new world to photography.

11. Spectrum analysis, which so greatly extends our knowledge of the universe that by its assistance we are able to ascertain the relative heat and chemical constitution of the stars, and ascertain the existence, and measure the rate of motion, of stellar bodies which are entirely invisible.

12. The use of anaesthetics, rendering the most severe surgical operations painless.

13. The use of antiseptics in surgical operations, which has still further extended the means of saving life.

Now, if we ask what inventions comparable with these were made during the previous (eighteenth) century, it seems at first doubtful whether there were any. But we may perhaps admit the development of the steam engine from the rude but still useful machine of Newcomen to the powerful and economical engines of Boulton and Watt. The principle, however, was known long before, and had been practically applied in the previous century by the Marquis of Worcester and by Savery; and the improvements made by Watt, though very important, had a very limited result. The engines made were almost wholly used in pumping water out of deep mines, and the bulk of the population knew no more of them, nor derived any more direct benefit from them than if they had not existed.

In the seventeenth century, the one great and far-reaching invention was that of the telescope, which, in its immediate results of extending our knowledge of the universe and giving possibilities of future knowledge not yet exhausted, may rank with spectrum analysis in our own era. The barometer and thermometer are minor discoveries.

In the sixteenth century we have no invention of the first rank, but in the fifteenth we have printing.

The mariner's compass was invented early in the fourteenth century, and was of great importance in rendering ocean navigation possible and thus facilitating the discovery of America.

Then, backward to the dawn of history, or rather to prehistoric times, we have the two great engines of knowledge and discovery—the Indian or Arabic numerals leading to arithmetic and algebra, and, more remote still, the invention of alphabetical writing.

Summing these up, we find only five inventions of the first rank in all preceding times—the telescope, the printing press, the mariner's compass, Arabic numerals, and alphabetical writing, to which we may add the steam engine and the barometer, making seven in all, as against thirteen in our single century.

Coming now to the theoretical discoveries of our time, which have extended our knowledge or widened our conceptions of the universe, we find them to be about equal in number, as follows:

1. The determination of the mechanical equivalent of heat, leading to the great principle of the conservation of energy.

2. The molecular theory of gases.

3. The mode of direct measurement of the velocity of light, and the experimental proof of the earth's rotation. These are put together because hardly sufficient alone.

4. The discovery of the function of dust in nature.

5. The theory of definite and multiple proportions in chemistry.

6. The nature of meteors and comets, leading to the meteoric theory of the universe.

7. The proof of the glacial epoch, its vast extent, and its effect upon the earth's surface.

8. The proof of the great antiquity of man.

9. The establishment of the theory of organic evolution.

10. The cell theory and the recapitulation theory in embryology.

11. The germ theory of the zymotic diseases.

12. The discovery of the nature and function of the white blood-corpuscles.

Turning to the past, in the eighteenth century we may perhaps claim two groups of discoveries:

1. The foundation of modern chemistry by Black, Cavendish, Priestley and Lavoisier; and

2. The foundation of electrical science by Franklin, Galvani and Volta.

The seventeenth century is richer in epoch-making discoveries, since we have:

3. The theory of gravitation established

4. The discovery of Kepler's laws.

5. The invention of fluxions and the differential calculus.

6. Harvey's proof of the circulation of the blood.

7. Roemer's proof of finite velocity of light by Jupiter's satellites.

Then, going backward, we can find nothing of the first rank except Euclid's wonderful system of geometry, derived from earlier Greek and Egyptian sources, and perhaps the most remarkable mental product of the earliest civilizations; to which we may add the introduction of Arabic numerals and the use of the alphabet. Thus in all past history we find only eight theories or principles antecedent to the nineteenth century as compared with twelve during that century.